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dependent upon climatic causes. What has been called the "suicidal mystery of the flower" is graphically stated as follows: "When the given moment has come round, every plant of the same species, whether old or young, over a vast region will put forth its flowers at one and the same moment, and, having seeded, for a time the plant disappears." A curious instance is given of this phenomenon observed under cultivation. In 1867 or 1868 *Arundinaria Japonica* began to bloom in Paris; "at the same moment" blossoms were noted on the plants at Marseilles; and even those in the government gardens at Algiers "flowered in concert with their European brethren; and not only did the whole of the canes, old as well as young, bear flowers together, but the very shoots (three to four inches high) as they showed above the soil, were transformed into flowering stems." In this case, however, the plants were not killed, but very much weakened; for a long time "remaining paralyzed." Mr. Mitford has observed that only those species are hardy in England whose leaves show "tessellated" venation, that is, "in chequers, crossing one another like the threads of a spider's web or the meshes of a net." The tender species observed all have leaves with the ordinary "striated" venation. Mr. Mitford has also observed this same tessellation in the leaves of the only hardy palm of England (*Chamærops excelsa*), and its absence in the tender palms. Mr. Thiselton-Dyer is quoted as remarking that "there must be something important behind a character like this."

The book is handsomely gotten up in white buckram and gilt, on thick paper with deckle edges. The full-page illustrations by Alfred Parsons are charming.—J. M. C.

The Bonn text-book.

WHEN four of the botanical staff of the University of Bonn combined to write the text-book which, fifteen months after the first, appeared in a second edition,⁴ they owed it to their readers to choose a more distinctive title than *Lehrbuch der Botanik*. One cannot cite it now in any decently brief way, but must perforce reel off the list of author's names like a catalogue! For this is a book that one needs to name to students, and that often. No text-book at all comparable with it has been produced in recent years, and unless we much mistake, it is destined to be of somewhat the same value to the present generation as Sachs' classical *Lehrbuch* was to the last. Its excellence carried it through four German and two English editions, besides others in other languages, while it directly inspired and formed the model for various texts by different authors. Much of the excellence of the Bonn

⁴STRASBURGER, NOLL, SCHENCK, and SCHIMPER:—*Lehrbuch der Botanik für Hochschulen. Zweite umgearbeitete Auflage.* 8vo. pp. vi+556. figs. 594, in part colored. Jena: Gustav Fischer. 1895. *M.* 7.50 unbound; *M.* 8.50 bound.

text-book is due to the division of labor made possible by having four collaborators, each a specialist in the section he treats.

Was it pure accident that exactly one-fourth of the pages are by Strasburger, on morphology, one-fourth by Noll, on physiology, while in the remaining half, the cryptogams, by Schenck, yield a little to the phanerogams, by Schimper? There seems something too much of exactness here for pure accident, particularly as one would hardly expect such a division of space from the nature of the subjects.

It is difficult, where all is so good, to point out the best; yet every reader will concede the palm to the first half of the book. External morphology is cut rather short by Professor Strasburger, and we are so charmed by his treatment of the internal morphology that we are less ready to forgive him the abbreviation. The presentation of the physiology is particularly clear and effective. But the enumeration of the characters of each order, and even of each family among the phanerogams, seems to us barren and unfruitful. Why can we not have a treatment of special morphology which shall be more thoroughly comparative? There is need to organize the facts known so that they shall form for the student a body of symmetric truth, rather than remain disconnected members, related indeed, but scattered as it were in a valley of dry bones. Some attempt at this indeed is made by both Schenck and Schimper, and with much greater success by the former. Schimper seems less able to free himself from the overpowering precedents in the treatment of phanerogams, so that one finds less that is fresh or suggestive here than in any other part of the book.

Yet it is all good after its kind; well put, well printed, excellently illustrated. The colored figures are rather for show than of value, though they are quite truthful in color. We hope soon to welcome an English translation of this excellent book.—C. R. B.

MINOR NOTICES.

MR. B. T. GALLOWAY has prepared a brief paper upon "Frosts and freezes as affecting cultivated plants," in which he has brought together some of the more important facts relating to frosts and freezes as affecting the farmer, gardener, and fruit grower. The paper appears in the Yearbook of the Department of Agriculture for 1895, or may be obtained as a separate.—J. M. C.

MR. A. S. HITCHCOCK, in the last bulletin (no. 57) from the Kansas Experiment Station, which is the third contribution upon the subject of Kansas weeds, introduces some useful features in presentation. Instead of the customary bare list, with perhaps a few notes, the list is a descriptive one, with easy artificial keys; numerous plates give typical leaves, to aid in iden-